



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,911	10/19/2001	Salvatore Nicholas Storino	ROC920010285US1	1410

7590

06/16/2003

Robert R. Williams  
IBM Corporation, Dept. 917  
3605 Highway 52 North  
Rochester, MN 55901-7829

EXAMINER

SUN, XIUQIN

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/045,911

Applicant(s)

STORINO, SALVATORE  
NICHOLAS

Examiner

Xiuqin Sun

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15 and 18 is/are rejected.
- 7) ☒ Claim(s) 5, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kou (U.S. Pub. No. 2003/0030429 A1).

Kou teaches an apparatus that provides at least one estimated effective age of a product (abstract; sections 0003-0005), comprising: at least one sensor that provides data about an environmental condition (sections 0015, 0023, 0044, and 0076); a device that uses said data to calculate an age acceleration factor for said product for at least one of said sensors (sections 0044, and 0048-0056); at least one accumulator that provides the estimated effective age for said product, based upon said age acceleration factor (sections 0049, 0051-0054); and a display capable of presenting said estimated effective age to a user of said product (section 0061). Kou also teaches a method for producing one or more estimates of effective age of a product, comprising the steps of: sensing one or more environmental conditions (sections 0015, 0023, 0044, and 0076); computing an age acceleration factor for each of the environmental conditions sensed,

Art Unit: 2863

using a model that relates the environmental condition to the age acceleration factor (sections 0044, 0048-0056, and 0070-0072); computing effective age values, using said acceleration factors (sections 0049, 0051-0054, and 0073-0075); storing said effective age values into nonvolatile storage (sections 0061 and 0073-0075); and displaying said effective age values to a user of said product on a display (section 0061). Kou further teaches: said device that uses said data to calculate an age acceleration factor is a digital processor (section 0031); said accumulator is at least partially implemented in memory storage (sections 0051, 0053 and 0070).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Ramamurthi (U.S. Pat. No. 5251144).

Kou teaches the system and method that includes the subject matter discussed above. Kou does not mention explicitly that: said sensor includes an analog to digital conversion function.

Ramamurthi discloses a system for predicting the life of a cutting tool, and teaches: a plurality of sensors that include an analog to digital conversion function (col. 4, lines 1-19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Ramamurthi analog to digital converter in the system of Kou in order to convert the sensed analog signals to digital signals so that the signals can be processed by the digital computer (Ramamurthi, col. 4, lines 1-19).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Ramamurthi et al., as applied to claims 1 and 2 above, and further in view of Pastor et al. (U.S. Pat. No. 5371066).

Kou and Ramamurtui et al. teach the system and method that includes the subject matter discussed above, but do not mention explicitly that: said digital processor is programmed to compute an Arrhenius estimate of said age acceleration.

Pastor et al. teach the Arrhenius rate equation for producing monatomic oxygen (col. 6, lines 1-17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Pastor et al. Arrhenius rate equation in the combination of Kou and Ramamurthi et al. in order to compute an estimate of the oxidation rate of a material that is subject to oxidation in a known environment (Pastor et al., abstract and col. 6, lines 1-17).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Ramamurthi et al., as applied to claims 1 and 2 above, and further in view of Talbott (U.S. Pat. No.6411908).

Kou and Ramamurtui et al. teach the system and method that includes the subject matter discussed above, but do not mention explicitly that: said digital processor is programmed to compute a Coffin-Manson estimate of said age acceleration.

Talbott teaches using a Coffin-Manson equation to calculate an estimate of the remaining life of an electronic component as a function of environment conditions (col. 2, lines 7-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Talbott Coffin-Manson equation in the combination of Kou and Ramamurthi et al. in order to provide a "predetermined life equation" to compute an estimate of said age acceleration (Talbott, abstract and col. 2, lines 7-23).

7. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Ramamurthi et al., as applied to claims 1 and 2 above, and further in view of Kon (U.S. Pat. No. 6249838 B1) and Kaehler et al. (U.S. Pat. No. 6092410).

Kou and Ramamurtui et al. teach the system and method that includes the subject matter discussed above, but do not mention explicitly that: said accumulator is at least partially implemented in nonvolatile storage; said nonvolatile storage is a ferroelectric memory; said nonvolatile storage is a flash memory; said nonvolatile storage is a hard disk; said nonvolatile storage is a volatile memory element, with continuity of power provided by a battery.

Kon teaches storing "remaining-expected-lifetime" information of a product in nonvolatile storage, said nonvolatile storage is a flash memory; said nonvolatile storage

Art Unit: 2863

is a hard disk; said nonvolatile storage is a volatile memory element, with continuity of power provided by a battery (col. 8, lines 21-60).

Kaehler et al. further teach various types of nonvolatile storage, including a ferroelectric memory (col. 4, lines 39-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teachings of Kon and Kaehler et al. in the combination of Kou and of Ramamurthi et al. in order to facilitate the access of the stored data and also to achieve a degree of confidence in the continued operation of the system (Kon, col. 1, lines 13-30 and Kaehler et al., col. 4, lines 44-48).

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Berger et al. (U.S. Pat. No. 6043464).

Kou teaches the system and method that includes the subject matter discussed above. Kou does not mention explicitly that: said sensor produces an analog voltage output, said analog voltage output varying substantially linearly responsive to a change in temperature.

Berger et al. teach a means for sensing the environmental temperature wherein a sensor produces an analog voltage output, said analog voltage output varying substantially linearly responsive to a change in temperature (col. 3, lines 11-23; col. 4, lines 37-46 and col. 5, lines 3-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Berger et al. in the Kou system in order to

Art Unit: 2863

facilitate the analysis of the sensed data based on voltage outputs (Berger et al., col. 3, lines 64-67 and col. 4, lines 1-23).

9. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Berger et al., as applied to claim 11 above, and further in view of Johnson (U.S. Pat. No. 5694132).

Kou and Berger et al. teach the system and method that includes the subject matter discussed above, but do not mention explicitly that said device that uses said data to calculate an age acceleration factor for said product is a VCO, said VCO producing a VCO output signal that varies substantially exponentially responsive to a linear voltage change on an input of the VCO.

Johnson teaches a VCO for processing voltage data, for sensing the environmental temperature wherein a sensor produces an analog voltage output, said VCO producing a VCO output signal that varies substantially exponentially responsive to a linear voltage change on an input of the VCO. (col. 2, lines 10-17; col. 2, lines 47-54 and col. 6, lines 6-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Johnson in the combination of Kou and Berger et al. in order to facilitate the analysis of the sensed voltage data for the purpose of calculating said age acceleration factor (Johnson, Abstract).

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kou in view of Grimm (U.S. Pub. No. 2002/0107589 A1).



Kou teaches the system and method that includes the subject matter discussed above. Kou does not mention explicitly that: said step of displaying said effective age values further comprises the steps of: determining if any of said values are outside of predetermined ranges; and alerting the user if any of said values are outside of predetermined ranges by lighting a light, sounding an audible alarm, or presenting said values on said display.

Grimm discloses a method and device for determining changes in technical systems, and teaches the step of displaying effective age values of the systems which further comprises the steps of: determining if any of said values are outside of predetermined ranges (section 0033); and alerting the user if any of said values are outside of predetermined ranges by lighting a light, sounding an audible alarm, or presenting said values on said display (section 0009).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Grimm in the system of Kou in order to provide a more efficient means for displaying the result of said computations (Grimm, section 0009).

#### ***Allowable Subject Matter***

11. Claims 5, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Reasons for Allowance***

12. The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claim 5 is the inclusion of the limitation that said digital processor is programmed to compute a Hallberg-Peck estimate of age acceleration. It is this limitation found in the claim, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes the claim allowable over the prior art.

The primary reason for the allowance of claim 16 is the claimed step of computing an age acceleration factor that comprises the use of the Arrhenius equation, the Hallberg-Peck equation, or the Coffin-Manson equation. It is this step found in the claim, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes the claim allowable over the prior art.

The primary reason for the allowance of claim 17 is the claimed steps of: computing a normalized effective age for some or all of the effective ages by dividing the instant effective age by a wall clock age; computing an effective life used value for some or all of the effective ages by dividing the instant effective age by a predetermined estimate of life of the product; and computing an effective life remaining value for some or all of the effective ages by subtracting said effective life used value from "1 ". It is these steps found in the claim, as they are claimed in the combination, that have not been found, taught or suggested by the prior art of record which make the claim allowable over the prior art.

Art Unit: 2863

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Contact Information**

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

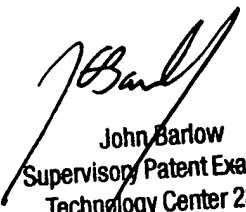
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-5841 for regular communications and (703)308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

XS

XS

June 10, 2003

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800